

**REMARKS**

The Examiner has objected to the drawings, the specification as well as the claims. The Examiner has rejected claims 2 through 4 under 35 U.S.C. §112, First Paragraph. The Examiner has rejected claims 2 through 4, 13, 18 and 21 under 35 U.S.C. §112, Second Paragraphs. Furthermore, the Examiner has rejected claims 1, 5, 10, 14 and 19 under 35 U.S.C. §102. Lastly, the Examiner has rejected claims 1 through 4, 6 through 13, 15 through 27 under 35 U.S.C. §103. In view of the above amendments to the specification, the drawings and the claims, the Applicants respectfully request the Examiner to reconsider the pending rejections. After entry of this amendment, claims 6 through 9, 15 through 18, 20 through 32 will remain pending in the current application.

**The Drawing Objections**

The Examiner has objected to FIGURES 12A, 12B and 13 for the lack of a prior art legend. Accordingly, the Applicants corrected the drawings to incorporate a prior art label as the Examiner has kindly suggested. Thus, the Applicants respectfully submit to the Examiner that the drawing objections should be withdrawn.

**The Specification Objections**

The Examiner has objected to the specification for informalities on page 2. Accordingly, the informalities that the Examiner has pointed out have been corrected as the Examiner has kindly suggested. Thus, the Applicants respectfully submit to the Examiner that the specification objections should be withdrawn.

The Claim Objections

The Examiner objected to claim 19 and the three last claims for informalities. Since claim 19 has been cancelled by this amendment, the objection to claim 19 is now moot. The last three claims have been now renumbered as 25, 26 and 27 to eliminate the duplicated claim numbers as the Examiner has pointed out. Thus, the Applicants respectfully submit to the Examiner that the claim objections should be withdrawn.

Additional Claim and Drawing Amendment

Independent claim 28, 29 and 30 have been added to respectively replace now cancelled independent claims 1, 10 and 19. Due to extensive amendments, independent claims 1, 10 and 19 have been cancelled rather than amended. Pending original dependent claims now depend from one of newly added independent claims 28, 29 and 30. Newly added independent claims 28 through 32 have been supported by the original disclosures of the current application and no new matter has been added to the current application.

With respect to claims 19 and 32, to clarify the support for the subject matter limitations, FIGURE 1 has been amended to include the monitor 232, 233 and the switch request unit 237, 238. These elements have been supported by the original disclosures at lines 21 and 25 on page 6 of the current application. In this regard, the reference numerals of these originally supported elements are also incorporated in the specification on page 6. For the above reasons, the Applicants respectfully submit to the Examiner that the additional claim and drawing amendments should be entered.

The Section 112 Rejections

The Examiner has rejected claims 2 through 4 under 35 U.S.C. §112, First Paragraph and Second Paragraph. The Examiner also rejected claim 13 under 35 U.S.C. §112, Second Paragraph. Since claims 2 through 4 and 13 have been now cancelled by this amendment, the rejections to these claims are now moot.

In addition, the Examiner has rejected claims 18 and 21 under 35 U.S.C. §112, Second Paragraph. With respect to claim 18, the Examiner has pointed out insufficient antecedent basis for the limitation, “[t]he system.” Accordingly, the dependency of claim 18 has been changed to claim 29 in order to overcome the antecedent problem. With respect to claim 21, the Examiner has pointed out that it is not clear whether the phrase, “a two two-in-two-out optical switch” means “one two-in-two-out optical switch” or “two two-in-two-out optical switches.” Accordingly, claim 21 has been amended to explicitly recite “a set of two two-in-two-out optical switches.”

Based upon the above described amendments and the cancellation, the Applicants respectfully submit to the Examiner that all of the rejections under 35 U.S.C. §112 should be withdrawn.

The Section 102 Rejections

The Examiner has rejected claims 1, 5, 10, 14 and 19 under 35 U.S.C. §102(e) as allegedly being anticipated by the Li et al. reference. The Examiner also rejected claims 1, 10 and 19 under 35 U.S.C. §102(e) as allegedly being anticipated by the Johnson reference. As described above, independent claims 1, 10 and 19 have been respectively replaced by newly added claims 28, 29 and 30. For this reason, the following arguments are directed to the patentable features of newly added independent claims 28, 29 and 30 to overcome the above section 102 rejections.

Newly added independent claim 28 now explicitly recites the following steps:

- blocking an output to the fourth terminal from the second node;
- transmitting a first switch request from the second node to the first node;
- blocking an input from the second terminal to the first node in response to the first switch request;
- switching the first terminal to connect to the second optical transmission from the first optical transmission after the input is blocked from the second terminal;
- transmitting a second switch request from the first node to the second node; and
- switching the third terminal to connect to the second optical transmission from the first optical transmission in response to the second switch request.

Newly added independent claim 29 now explicitly recites the following elements:

- a second blocking unit connected to the fourth terminal blocking an output to the fourth terminal from the second node;
- a second switch request unit for transmitting a first switch request from the second node to the first node; . . .
- a first blocking unit connected to the third terminal for blocking an input from the third terminal to the first node in response to the first switch request;
- . . . ; and
- a first switch request unit for transmitting a second switch request from the first node to the second node, wherein said second switch unit switching the second terminal to connect to the second optical transmission from the first optical transmission in response to the second switch request.

Similarly, newly added independent claim 30 now explicitly recites the following elements:

- a switch request unit connected to the first optical transmission line for transmitting to another one of the optical protection switching apparatus a switch request message indicative of a switch between the first optical transmission line and the second optical transmission line in response to a switch request signal;
- a blocking unit connected between the second terminal and said switch for blocking an optical signal between the second terminal and said switch in response to a blocking signal and generating a block completion signal upon completing the block;
- a monitor unit connected to the first optical transmission line for detecting a predetermined fault condition in the first optical transmission line and generating a fault condition signal; and
- a controller connected to said monitor unit, said switch request unit and said blocking unit for generating the blocking signal in response to the fault condition signal and the switch request signal in response to the block completion signal.

In each of newly amended claims 28 and 29, it is explicitly recited that a particular optical transmission line is blocked for traffic in order to prevent a misconnection during a switch. The "blocking" step or unit initially blocks traffic to a specific optical transmission line at one node. Subsequently, the "switch request unit" or the "transmitting" step transmits "a switch request" signal or message to another node

from the node that has completed the above blocking operation. Then, at the other node, another “blocking” step or unit initially blocks traffic to the specific optical transmission line. Upon completing the blockage at both ends of the optical transmission line, the other node performs a switch operation, and the “transmitting” step transmits “a switch request” signal or message to the original node. Upon receiving the switch request signal or message, the original node also performs the switch to complete the protected switch operation.

Similarly, newly amended independent claim 30 recites “the blocking unit” to block traffic in the optical transmission line upon receiving “the blocking signal” that was generated by “the controller” in response to the fault condition signal from “the monitor unit.” The controller also generates “the switch request signal” in response to “the block completion signal” so that the “switch request unit” transmits “a switch request message” to another optical protection switching apparatus.

In summary, newly added independent claims 28, 29 and 30 explicitly recite the coordination of the steps of or units for initially blocking the traffic to a specific optical transmission line and subsequently switching the optical transmission lines via a series of signals and messages between the nodes or optical protection switching apparatuses.

In sharp contrast, the Li et al. reference fails to disclose the above described coordinated steps or units to accomplish the optical line switch in a prescribed manner. The Li et al. reference discloses switch devices 34 and 66 to block traffic to and from a specific optical transmission line in FIGURE 2B. The Li et al. reference fails to anticipate the above described steps of or units for “transmitting a first switch request” or “transmitting a second switch request” to another node such as “the second node” and “the first node” as explicitly recited in newly added independent claims 28 and 29. Similarly, the Li et al. reference fails to anticipate the “switch request unit” for transmitting to another one of the optical protection switching apparatus a switch request

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message" as explicitly recited in newly added independent claim 30. Independent claims 1, 10 and 19 have been cancelled. Dependent claims 5 and 14 have been also cancelled. Thus, the Applicants respectfully submit to the Examiner that the rejections of claims 1, 5, 10, 14 and 19 under 35 U.S.C. §102(e) based upon the Li et al. reference should be moot and that the same rejection base should not be applicable to newly amended independent claims 28, 29 and 30 in view of their patentable features.

Also in sharp contrast, the Johnson reference fails to anticipate the subject matter limitations of newly added independent claims 28, 29 and 30. The Johnson reference discloses the optical switches 121 through 124 in FIGURE 8 to switch between the high and low priority ports. Under the fault condition, the switches 121 through 124 are switched to opposite states from that shown in FIGURE 8 which drop the preemptive traffic in favor of higher priority protected traffic re-routed around a fiber cut or other failure. However, the Johnson reference fails to anticipate the above described steps of or units for "transmitting a first switch request" and "transmitting a second switch request" to another node such as "the second node" and "the first node" as explicitly recited in newly added independent claims 28 and 29. Similarly, the Johnson reference fails to anticipate the "switch request unit for transmitting to another one of the optical protection switching apparatus a switch request message" as explicitly recited in newly added independent claim 30. Independent claims 1, 10 and 19 have been cancelled. Thus, the Applicants respectfully submit to the Examiner that the rejections of claims 1, 10 and 19 under 35 U.S.C. §102(e) based upon the Johnson reference should be moot and that the same rejection base should not be applicable to newly amended independent claims 28, 29 and 30 in view of their patentable features.

The Section 103 Rejections

The Examiner has rejected claims 1 through 4, 10 through 13 and 19 through 24 under 35 U.S.C. §103(a) as being allegedly being obvious over the ITU-T reference in view of the Umehara et al. reference. The Examiner has also rejected claims 6, 15 and 24 under 35 U.S.C. §103(a) as being allegedly being obvious over the Li et al. reference in view of Umehara et al. reference. The Examiner has rejected claims 7, 8, 16, 17, 25 and 26 under 35 U.S.C. §103(a) as being allegedly being obvious over the Li et al. reference. Lastly, the Examiner has also rejected claims 9, 18 and 27 under 35 U.S.C. §103(a) as being allegedly being obvious over the ITU-T reference in view of Umehara et al. reference and further in view of the Taketomi et al. reference. As described above, independent claims 1, 10 and 19 have been respectively replaced by newly added claims 28, 29 and 30. For this reason, the following arguments are directed to the patentable features of newly added independent claims 28, 29 and 30 to overcome the above section 103 rejections.

Among the above 103 rejection bases, since the Examiner has cited the ITU-T reference in view of the Umehara et al. reference to reject independent claims 1, 10 and 19, the Applicants respectfully request the Examiner to consider the following discussion on the patentable features of newly added claims 28, 29 and 30 to overcome the ITU-T reference and the Umehara et al. reference.

As discussed above with respect to the 102 rejections, the newly added independent claims 28, 29 and 30 explicitly recite the coordination of the steps of or units for initially blocking the traffic to a specific optical transmission line and subsequently switching the optical transmission lines via a series of signals and messages between the nodes or optical protection switching apparatuses.

The ITU-T reference discloses a generic switching scheme between two sites via four optical fibers. The protection matrix connections (MCp) or switches among the optical fibers. As the Examiner has conceded, the ITU-T reference fails to disclose, teach or suggest the isolation or blockage of the optical line to remove traffic.

For the lack of the above disclosure, the Umehara et al. reference discloses the preparatory receiving optical gate that breaks the optical signal to be supplied to the preparatory drop port. As disclosed in FIGURE 4, the Umehara et al. reference discloses the preparatory receiving optical gate 10 to discard the optical signal so as to prevent the preparatory terminal unit 14 from receiving the optical signal from working terminal 19 during the recovery of the fault of the working path 15.

The Examiner contends that the combined disclosures of the ITU-T reference and the Umehara et al. reference make the invention as claimed in newly added independent claims 28, 29 and 30 an obvious modification. In contrast to the above contention, the Applicants respectfully point out that newly added independent claims 28 and 29 both explicitly recite steps of or units for "transmitting a first switch request" and "transmitting a second switch request" to another node such as "the second node" and "the first node." Similarly, newly added independent claim 30 explicitly recites the "switch request unit for transmitting to another one of the optical protection switching apparatus a switch request message." The above explicitly recited features coordinate the operational events including the blockage of traffic so as to substantially eliminate the erroneous transmission of traffic during the switching for recovery.

The combined disclosures of the ITU-T reference and the Umehara et al. reference fail to disclose, teach or suggest the transmission of a switch request between two node or switch apparatuses. Although the Umehara et al. reference discloses a blocking gate, no suggestion or reference is made to a signal between the nodes or switch apparatuses to sequentially activate the blocking gate and or the switch during the

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recovery period. The "switch request" is critical in coordinating the blocking gates and the switches in order to ascertain that no traffic from either of the two nodes or switch apparatuses undesirably enters into the optical transmission line during the recovery. For the above described reasons, it would not have been obvious to one of ordinary skill in the art to provide the patentable features as explicitly recited in newly added independent claims 28, 29 and 30 based upon the cited references alone or in combination. Dependent claims 2 through 4 and 11 through 13 have been cancelled, and the rejections of these claims are now moot. Thus, the Applicants respectfully submit to the Examiner that the rejections of claims 1 through 4, 10 through 13 and 19 through 24 under 35 U.S.C. §103(a) based upon the ITU-T reference and the Umehara et al. reference should be moot and that the same rejection base should not be applicable to newly amended independent claims 28, 29 and 30 in view of their patentable features.

Dependent claims 6 through 9, 15 through 18 and 20 through 27 that have been rejected under 35 U.S.C. §103 now respectively depend from newly added independent claims 28, 29 and 30 and incorporate the patentable features of the newly added independent claims. For the rejections of these dependent claims, the Examiner has cited some combinations of the ITU-T reference, the Umehara et al. reference, Li et al. reference and the Taketomi et al. reference. As the Applicants have already respectfully submitted to the Examiner, none of the ITU-T reference, the Umehara et al. reference and Li et al. reference lacks any disclosure on the above discussed critical patentable features of coordinating the blocking and switching steps and units via a "switch request" between the two relevant nodes or switch apparatuses.

The Taketomi et al. reference discloses an optical transmission system and transmission line switching control method. The disclosures are directed to solve the problems associated with or limited by the SONET standard. The problems include the switching priority and the number of working lines. The Taketomi et al. reference also discloses a storage unit to store the current configuration in memory for keeping track of

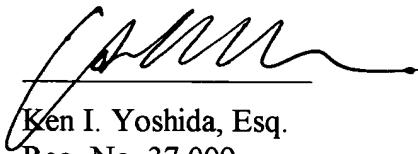
which path is carrying high priority traffic. However, no disclosure in the Taketomi et al. reference teaches, discloses and suggests the above discussed critical patentable features of coordinating the blocking and switching steps and units via a "switch request" between the two relevant nodes or switch apparatuses. Thus, even if the above four cited references are combined as the Examiner has asserted, the combined disclosures still fails to disclose, teach or suggest the above patentable features of the coordinated switch request step or unit as newly amended independent claims 28, 29 and 30 explicitly recite.

Based upon the above reasons, the Applicants respectfully submit to the Examiner that it would not have been obvious to one of ordinary skill in the art to provide the patentable features as explicitly recited in newly added independent claims 28, 29 and 30 based upon the cited references alone or in combination. Independent claims 1, 10 and 19 have been cancelled. Dependent claims 6 through 9, 15 through 18 and 20 through 27 now ultimately depend from newly added independent claim 28, 29 or 30 and incorporate the patentable features of the newly added independent claims. Therefore, the Applicants respectfully submit to the Examiner that the rejections of 1, 6 through 10, 15 through 27 under 35 U.S.C. §103 should be withdrawn and that the same rejection base should not be applicable to newly amended independent claims 28, 29 and 30 in view of their patentable features.

Conclusion

In view of the above amendments and the foregoing remarks, Applicant respectfully submits that all of the pending claims are in condition for allowance and respectfully request a favorable Office Action so indicating.

Respectfully submitted,



Ken I. Yoshida, Esq.  
Reg. No. 37,009

Date: April 27, 2004

KNOBLE YOSHIDA & DUNLEAVY LLC  
Eight Penn Center, Suite 1350  
1628 John F. Kennedy Blvd.  
Philadelphia, PA 19103  
(215) 599-0600  
Customer No.: 21,302

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NODE1

**SWITCH REQUEST UNIT**

237

**MONITOR**

230

235

236

240

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255

250

180

185

190

195

200

205

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215

225

NODE2

**SWITCH REQUEST UNIT**

238

**MONITOR**

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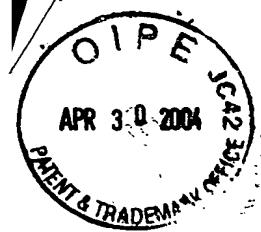
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Serial No.: 09/650,506  
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(PRIOR ART) FIG. 12A

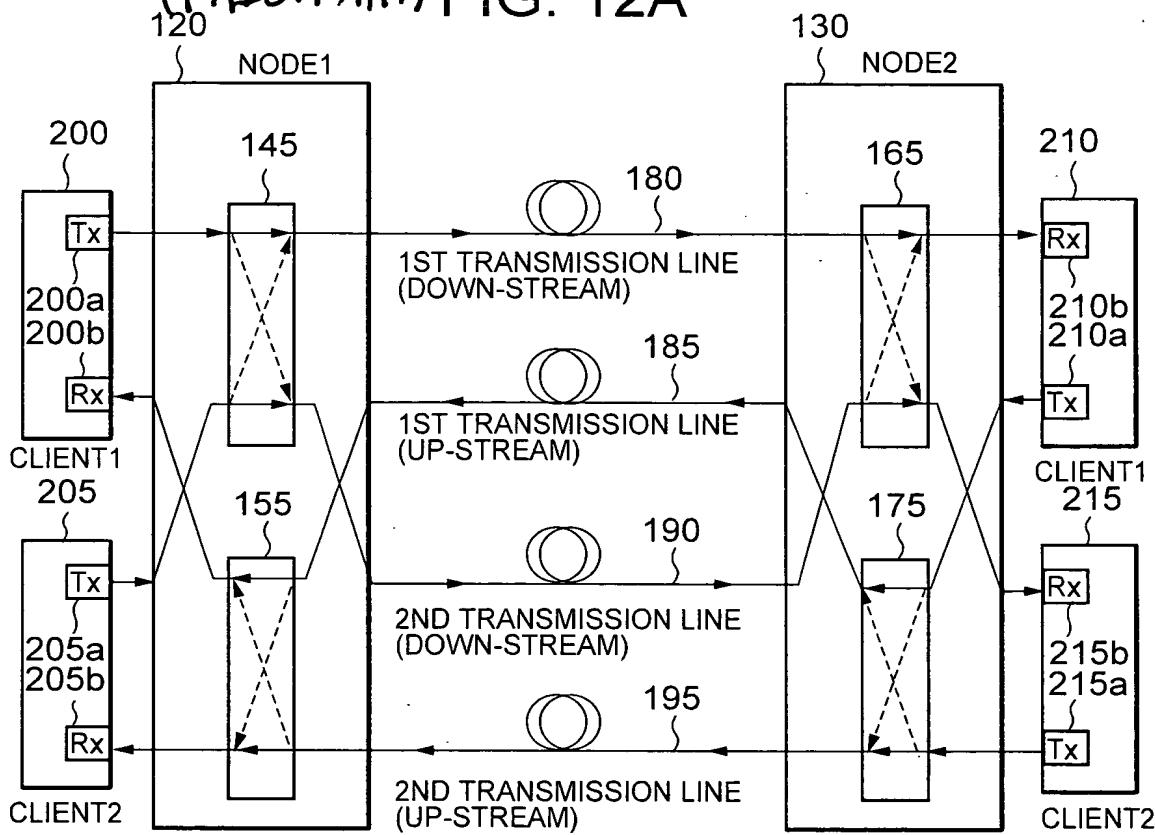
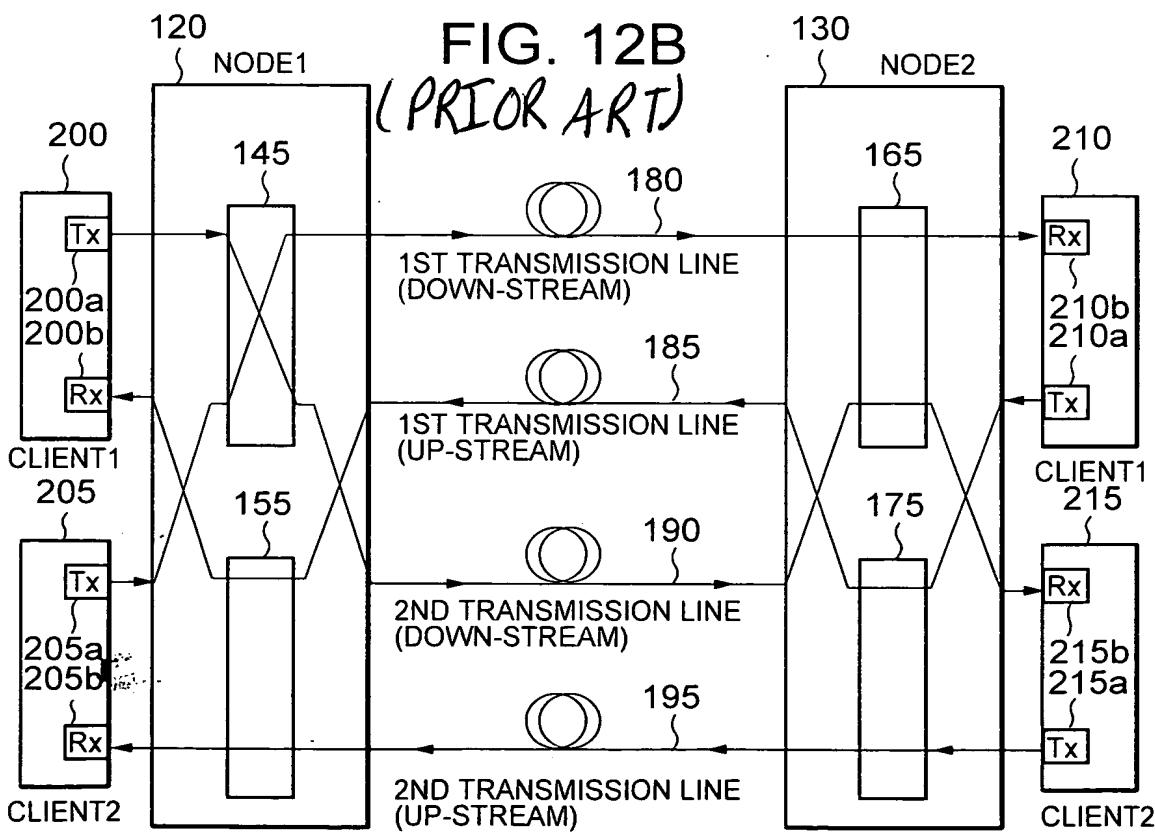


FIG. 12B  
(PRIOR ART)





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## FIG. 13(PRIOR ART)

TRANSMITTER	RECEIVER		
	NORMAL	AFTER SWITCHING OF TRANSMITTING NODE	AFTER SWITCHING OF BOTH NODES
200a CLIENT1	210b	215b (MIS CONNECTION)	210b
205a CLIENT2	215b	210b (MIS CONNECTION)	215b